Change in China's Summer Temporal Precipitation Concentration Property during 1961-2010 Based on a New Index

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Abstract

Based on the property of entropy, a new index Q is defined to measure the concentration property of the daily rainfall. Further, using the daily precipitation data of 553 observation stations during 1961 to 2010, the changes in the concentration property of the summer precipitation in China were investigated. Results indicate that the regions with greater Q locate in most part of the Northwest and the north of the Huang River, where daily precipitation concentrates. On the contrary, smaller Q is found in the east of the Tibetan Plateau, the southeast of the Northwest, and most part of the Southwest and South China, where precipitation disperses. The most obvious increased trends are found in South China and most part of the Southwest. In such places, precipitation shows a concentration trend. However, decreasing trends of Q indices are noted in the Northwest, the Tibetan Plateau, and the north of the Huai River. This means that the precipitation there tends to be more dispersed. Variations of the Q indices and the rainfall total during the summers of 1961-2010 in China both exhibit increasing trends. It is illustrated that the summer precipitation concentration increases during the period, and more intense and wetter days tend to occur more easily.

Key words： precipitation concentration, Q index, climate change